What is claimed is:

1. A method for making a ferrous metal alloy foil which has a high oxidation resistance and high dimension stability in an automotive exhaust gas atmosphere comprising the steps of:

a) providing a first layer of a first metal material;

b) sandwiching the first layer of the first material between a first and second layer of one or more second metal material(s) which is different from the first material thereby producing a sandwiched composite;

c) compaction rolling the sandwiched composite to a finished thickness metal composite foil;

d) processing the finished thickness metal composite foil into a honeycomb-like structure having channels for air flow;

e) placing the honeycomb-like structure into a furnace which has been preheated to near or at an annealing temperature, in an air atmosphere, and heating at an annealing temperature for a period of time which is sufficient to cause diffusion of said one or more second metal materials into said first metal materials to produce a monolithic honeycomb-like annealed alloy foil structure;

f) cooling the furnace and the monolithic honeycomb-like annealed alloy foil structure to room temperature;

wherein the one or more of the first metal material or second metal material(s) contains iron.

2. The method of claim 1, wherein the first metal material comprises Fe and Cr.

3. The method of claim 2, wherein the Cr content is about 16 to about 24 wt%.

4. The method of claim 1, wherein the first metal material is selected from stainless steel 430, 434 and 446.

5. The method of claim 2, wherein the second metal material comprises aluminum.

6. The method of claim 5, wherein the aluminum is essentially pure aluminum or

an aluminum alloy.

7. The method of claim 1, wherein the first metal material if FeCr and the second method material is Al.

8. The method of claim 7, wherein the furnace is preheated to an annealing temperature and the annealing temperature is from about 900º C to about 1,200º C.

9. The method of claim 8, wherein the period of time for annealing is between about 10 minutes and about 120 minutes.

10. The method of claim 9, wherein a monolithic FeCrAl alloy is formed, further wherein a pre-oxidized surface is formed.

11. The method of claim 10, wherein the pre-oxidized surface comprises Al-oxide.

12. The method of claim 7, wherein the preheated temperature is about 720º C.

13. The method of claim 12 further, wherein the furnace is heated to an annealing temperature of between about 900º C and 1,200º C within about 30 minutes after the honeycomb-like structure is placed in the furnace and the honeycomb-like structure is heated for about 2 hours at the annealing temperature.

14. The method of claim 13, wherein a monolithic FeCr-Al alloy is formed, further wherein a pre-oxidized surface is formed thereon.

15. The method of claim 14, wherein the pre-oxidized surface comprises Al-oxide.

16. A product produced in accordance with the process of claim 1.

17. A product produced in accordance with the process of claim 11.

18. A product produced in accordance with the process of claim 15.

19. A catalytic converter comprising a product produced according to the process of claim 11.

20. A catalytic converter comprising a product produced by the process of claim 15.

21. A process of making a ferrous metal substrate catalytic converter comprising the steps of:

a) providing a first layer of a first material selected from the group consisting of chromium containing ferrous metals or aluminum containing materials;

b) sandwiching said first layer of said first material between a first and second layer of a second material selected from the group consisting of chromium containing ferrous metals or aluminum containing materials not chosen for the first material thereby producing a sandwiched composite;

c) compaction rolling the sandwiched composite to a finished thickness metal foil;

d) processing the finished thickness metal composite foil into a honeycomb-like structure having channels for air flow;

e) placing the honeycomb-like structure into a furnace which has been preheated to near or at an annealing temperature, in an air atmosphere, and heating at an annealing temperature for a period of time which is sufficient to cause diffusion of said one or more second metal materials into said first metal materials to produce a monolithic honeycomb-like annealed alloy foil structure;

f) cooling the furnace and the monolithic honeycomb-like annealed alloy foil structure to room temperature;

wherein the cooled product of step f) has a pre-oxidized surface comprising Al-oxide.

22. The process of claim 21, wherein the first material is FeCr and the second material is pure Al.

23. A product produced according to the process of claim 21.

24. A catalytic converter comprising a product produced by the process of claim 21.